African Invertebrates Vol. 43 Pages 5–10 Pietermaritzburg December, 2002

A new species of *Tetrameringia* McAlpine (Diptera: Schizophora: Clusiidae) from Malawi, the third species from theAfrotropical Region

by

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ABSTRACT

The need for taxonomic treatment of the poorly studied afrotropical fauna of Clusiidae (including that of Madagascar) is discussed, and the known species are listed. There are currently ten species in four genera: *Allometopon*, *Heteromeringia*, *Sobarocephala* and *Tetrameringia*. The known African species of *Tetrameringia* are reviewed and a key to the two species is provided. *Tetrameringia stuckenbergi* is newly described from the Ntchisi Forest of Malawi. The only other named African species is *T. aethiopica* Stuckenberg, 1973, for which additional material examined is recorded; *aethiopica* is shown not to comprise two subspecies, but is widely distributed in South Africa (Mpumalanga, KwaZulu-Natal, Eastern Cape, Western Cape) and exhibits marked intraspecific colour variation.

INTRODUCTION

The Clusiidae are one of the afrotropical families of acalyptrate Diptera most in need of taxonomic attention. They are small, slender-bodied, dark flies, often with patterned wings; most species have a triangular extension at the mid height of the outer margin of the second antennal segment (Fig. 1); the fore coxae are also relatively remote from the mid and hind pairs. Adults usually inhabit undisturbed, shady, forested areas with high rainfall; the larvae develop in rotting vegetable matter and wood, and in fungi (Stuckenberg 1980: 636). Stuckenberg (*pers. comm.*) has observed adult clusiid flies on wild mushrooms in KwaZulu-Natal, but there is little other biological information known about the afrotropical species, which are rarely collected.

Since Stuckenberg (1973) described the first African species of the family, no new afrotropical clusiid species have been named, despite the accumulation of a significant number of new species (including several probable new generic records for the Afrotropical Region) in various collections. However, Barraclough (2000) recently transferred two species of afrotropical *Strongylophthalmyia* (Strongylophthalmyiidae), both described by Verbeke (see below), to the Clusiidae.

It is likely that at least 10 species occur in Madagascar, most of these being undescribed. Based on my examination of various collections of afrotropical Clusiidae, I would expect a total of about 30 species, with a current record of only 10 (including the species of *Tetrameringia* described below). In recent years I have seen material of Clusiidae (most of which is probably undescribed) from Cameroon, Kenya and Uganda. The family is likely to be widespread in forested parts of the Afrotropical Region.

The named afrotropical Clusiidae (see Stuckenberg 1973: 636 and Barraclough (2000)) include the following nine species in four genera: *Allometopon flavum* Lamb, 1914 [Seychelles], *Heteromeringia aethiopica* (Verbeke, 1968) [Democratic Republic of the Congo], *H. nigriceps* Lamb, 1914 [Seychelles], *H. nigrifrons* Lamb, 1914 [Seychelles, South Africa], *Sobarocephala milangensis* Stuckenberg, 1973 [Mozambique], *S. plumicornis* Lamb, 1914 [Seychelles], *S. zuluensis* Stuckenberg, 1973 [South Africa], *Tetrameringia aethiopica* Stuckenberg, 1973 [South Africa] and *T. distoma* (Verbeke, 1963) [Madagascar].

Tetrameringia stuckenbergi sp. n. (described below from Malawi) is a striking new species, which significantly extends the known range of the genus in Africa.

MATERIALS AND METHODS

This study was based on the examination of dry, pinned flies. Specimens examined are from the following depositories (acronyms in parentheses):

Canadian National Collections, Ottawa, Canada (CNC)
Natal Museum, Pietermaritzburg, South Africa (NMSA)

Bilaterally symmetrical structures are described in the singular. Label data of the primary type are quoted exactly as they appear, although supplementary information is sometimes given in square parentheses. A slash denotes the end of a line of print, and a semicolon separates data quoted on different labels. Holotype measurements are given in parentheses following the range for other specimens examined. Measurements of the head and thorax include the antennae. Wing length was measured from the humeral crossvein to the wing tip.

The male postabdomen was cleared in warm KOH. Following rinsing, relevant structures were dissected free and mounted in glycerine for examination and drawing using a Wild M5 stereomicroscope, with the aid of a drawing tube. Abdominal dissections were subsequently stored in glycerine, in microvials, beneath each source specimen.

TAXONOMY

Genus *Tetrameringia* McAlpine, 1960: 68. Type species: *Tetrameringia ustulata* McAlpine, 1960, by original designation.

Key to the South African species of *Tetrameringia*

1. Face sclerotised along entire height. Mesonotum with strikingly paler ground colour medially. Wing cells r_{2+3} and r_{4+5} without conspicuous hyaline areas at about mid-length (Fig. 2). Surstylus slender, strongly narrowed in basal two-fifths in profile (Fig. 3) .... **stuckenbergi** sp. n.

– Face sclerotised along upper two-fifths to half. Mesonotum entirely dark. Wing cells r_{2+3} and r_{4+5} with conspicuous hyaline areas at about mid-length (see Stuckenberg 1973: Fig. 3). Surstylus broad, only slightly narrowed in basal two-fifths in profile (see Stuckenberg 1973: Fig. 1) .... **aethiopica** Stuckenberg

Tetrameringia aethiopica Stuckenberg, 1973

Tetrameringia aethiopica Stuckenberg, 1973: 581; 1980: 636.

Additional material examined (all in NMSA, unless otherwise indicated): SOUTH AFRICA: *Mpumalanga*: 1 male, Lone Creek Falls, 11 km W. Sabi, 2530BB, 3.xii.1976, R. Miller. *KwaZulu-Natal*: 1 female, 75 km WSW. Estcourt, Cathedral Pks [sic] For. Sta., Rainbow Gorge, 10–18.xii.1979, S. & J. Peck, Podocarp For, dung cup traps (CNC); 1 male, Town Bush, Pietermaritzburg, xii.1976, R. Miller, Malaise trap; 1 female, *Tshwala*

Benyoni Farm, Merrivale, 1.xii.1994, B. Stuckenberg, at light in house. *Eastern Cape*: 2 females, Hogsback, 3226DB, 13–16.xii.1985, J. & B. Londt, forest & forest margins. *Western Cape*: 1 male, Dewale [sic] Forest, 13.i.1983, R. M. Miller.

Discussion: This species appears to be widespread in South Africa, and is now recorded from the KwaZulu-Natal midlands, afromontane forest in Mpumalanga (Lone Creek Falls) and the Eastern and Western Cape as far south as Knysna. The Knysna locality extends the species' range almost 400 km to the southwest, and the Lone Creek Falls locality, an additional 500 km to the northeast. It is likely that *aethiopica* occurs in suitably forested intervening areas, but is probably absent from afromontane forest in the KwaZulu-Natal Drakensberg.

Stuckenberg (1973: 584) suggested that a series of specimens from the Katberg in the Eastern Cape Province may represent a distinct variety or subspecies of *aethiopica*, as they differed from the KwaZulu-Natal type material in having bicolorous pleura and uni-colorous mid and hind femora. Examination of the additional material above convinces me that this is not the case, and that *aethiopica* exhibits considerable intraspecific variation in the colour of the thoracic pleuron and the mid and hind legs. Some of the specimens examined have only the propleural area (including the region around the anterior spiracle), the sternopleuron and the hypopleuron contrastingly paler, whilst in other specimens the pale colour is restricted to the propleural area and the ventral sections of the sternopleuron and hypopleuron. In addition, infuscation of the mid and hind femora may occur in specimens with a bicoloured pleuron, unlike the Katberg material. Other colour variation worth noting is that in some specimens the hind tibia is entirely dark, and the first abdominal tergite is sometimes yellow-brown in females, with the pale ground colour extending medially onto the anterior section of T2 in the Lone Creek Falls female.

I have examined the terminalia of the Knysna male; the shape and proportions of the surstylus and tergite 9 are closely similar to those figured for the paratype from the type locality (Stuckenberg 1973: 581).

Tetrameringia stuckenbergi sp. n.

(Figs 1–3)

Etymology: Named for Dr B. R. Stuckenberg, one of the collectors of the type series, and in recognition of his pioneering work on the African Clusiidae.

Holotype male: MALAWI: 'MALAWI Ntchisi Forest / reserve 1334Ac 1500m / Londt & Stuckenberg / 3–4.xii.1980 Montane / forest & woodland'; 'HOLOTYPE male / *Tetrameringia* / *stuckenbergi* sp. n. / Det. D. Barraclough, 2001'. In NMSA; in good condition.

Description: Male: Dimensions (in mm): Head/Thorax length 2.3–2.5 [2.5]; wing length 3.0–3.3 [3.3].

Colour/Pollinosity: Head (Fig. 1): Frons shining, dark brown to black at vertex and between ocelli, and dark over about posterior two-thirds, grading into yellow or pale yellow-brown on anterior one-third. Antenna yellowish, but arista distinctly darker brown. Parafacial mainly yellowish, somewhat darker ventrally. Face yellowish on upper two-thirds, but pale to dark brown on ventral third. Gena entirely yellowish. Outer

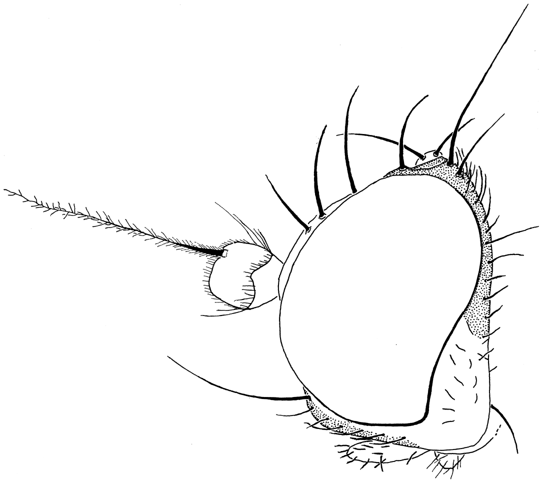

Fig. 1. *Tetrameringia stuckenbergi* sp. n., head profile, showing details of patterning and all vestiture.

margin of face, parafacials and gena with sparse silver pollinosity evident at certain angles only. Occiput shining dark brown to black on upper half, strikingly paler (yellowish) on ventral half. Proboscis yellowish, palpus yellow-brown.

Thorax mostly dark brown, but cream to yellow on propleuron and around anterior spiracle, and entire section of pleuron between upper margin of sternopleuron and haltere insertion; mesonotum yellowish medially and sublaterally, outer extent of pale ground colour coinciding roughly with dorsocentral row or just lateral to it, commencing near anterior margin between humeral calli and just posterior to humeral bristle insertions, although pale ground colour sometimes reaching medial section of anterior mesonotum margin; scutellum mostly dark or partly yellow-brown on basal half (particularly basal corners), with sparse silver pollinosity. Haltere mostly yellowish.

Legs: Fore leg mostly yellowish, but tibia pale brown (except at extreme base and apex). Mid leg entirely yellowish. Hind leg mostly yellowish to yellow-brown, basal half of tibia sometimes partly brownish.

Wing: Membrane hyaline basally, otherwise smoky brown over much of anterior two-thirds; largely hyaline posterior to cubital vein (Fig. 2).

Abdomen: Tergites dark brown to black, except tip of abdominal terminalia conspicuously yellow-brown.

Head (Fig. 1): Frons slightly convergent towards antennae, subequal or slightly shorter at mid-length (from anterior margin of anterior ocellus to ptilinal suture) to width; frons width 36–37 % of head width. Head width subequal to length of mesonotum. Head height 76–80 % of head width. Gena extremely narrow, at mid-length 6.5–7.0 % of eye height. Postgenal region not ventrally prominent, with posteroventrally directed bristle. Face narrow, 12–15 % of head width, higher than broad, sclerotised along entire height. Arista short-haired, longest hairs about twice width of arista at base. Spaces between orbital bristles about in proportion 2.0 : 4.0 : 4.5–5.0, anterior and second bristles subequal in length and strength, about three-quarters length and strength of posterior 2 pairs. Outer vertical bristle about three-quarters length and strength of inner

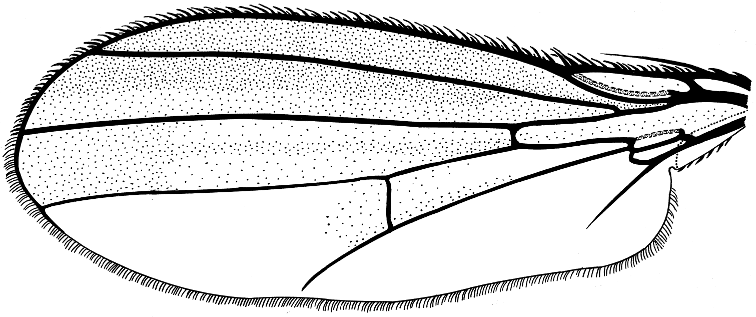

Fig. 2. *Tetrameringia stuckenbergi* sp. n., wing, showing patterning and venation.

vertical. Postvertical bristles subequal in length to posterior pair of orbitals, ocellars also subequal in length. Frons with sparse, pale, fine setulae. Vibrissa single, well developed, two-thirds to four-fifths length of arista.

Thorax: Two bristles on propleural region, the anterior moderately developed and the posterior weak. Mesopleuron with 1 bristle and with setulae scattered over posterior one-third. One sternopleural bristle, disc of sternopleuron sometimes with a few upwardly directed setulae. One strong humeral bristle; 2 notopleurals, anterior one longer, and posterior one slightly to noticeably shorter than humeral; 1 presutural, noticeably weaker than humeral, and half to three-quarters length; 1 long supra-alar; 1 very long anterior postalar, posterior postalar weak, noticeably less than half length and strength of anterior bristle; 0 + 2 dorsocentrals, anterior one one-quarter to one-third length of posterior one and inserted at about three-fifths distance between transverse and scutoscutellar sutures; 1 weak prescutellar acrostichal bristle, similar in length to anterior dorsocentral. Mesonotum with numerous stiff, suberect, setulae, these usually longer towards scutoscutellar suture. Scutellum with pair of very long (subequal in length or slightly shorter than posterior postalar) divergent, apical bristles, also 1 pair subapical marginal bristles and pair of cruciate discal scutellars in virtually the same transverse line, all subequal in length but about one-third length and strength of apicals. Prosternum with up to 3 dark setulae on each side.

Wing (Fig. 2): Venation as figured; r-m crossvein close to middle of discal cell; fourth vein index 2.7–3.1.

Legs: Fore femur with prominent row of strong, black, posteroventral bristles on much of length, reaching up to two-thirds depth of femur. Fore tibia with very small pre-apical bristle. Mid femur with similar posteroventral bristles, albeit length half femur depth. Mid tibia without pre-apical bristle, but with strong apico-ventral spur. Hind femur without differentiated posteroventral bristles. Hind tibia without dorsal pre-apical bristle, and sometimes with weak apico-ventral spur.

Abdomen: Tergites with profuse, dark setulae over much of surface, these longer laterally; marginal bristles just discernible.

Male terminalia (Fig. 3): Cercus short, reduced, dorsoventrally flattened, with a conspicuous long ventral setula. Surstylus broad basally, then abruptly narrowed and then gradually broadened to smoothly rounded apex. Only 1 pair of short, ovoid

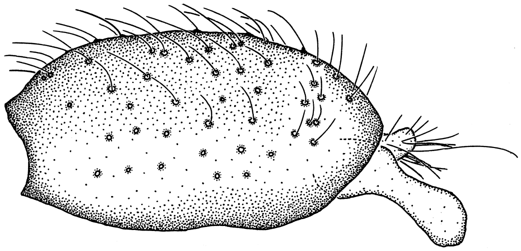

Fig. 3. *Tetrameringia stuckenbergi* sp. n., profile view of male terminalia, showing shape of T9, cercus and surstylus.

parameres, with indistinct apical setulae. Sternite 6 slender along entire height, narrowed and lanceolate dorsally. Aedeagus flexed to the right as in *aethiopica*.

Paratypes: 2 males, same data as holotype. In NMSA.

Discussion: *Tetrameringia stuckenbergi* apparently has no close relatives in the afrotropical fauna, including the numerous undescribed species from Madagascar. The Madagascan species *T. distoma* has strikingly distinct thoracic colouration. *T. stuckenbergi* is readily distinguished from the only named African species, *T. aethiopica* (see species key above). *T. stuckenbergi* is currently known only from the moist afromontane Ntchisi Forest in Malawi. This forest is in the upper part of the rift valley escarpment overlooking Lake Malawi, in a site exposed to heavy rains and dense mists in summer.

ACKNOWLEDGEMENTS

I am indebted to Dr B. Stuckenberg for his interest in my clusiid research and for reviewing an earlier draft of the this paper. Ms Catherine Conway (Dept of Arthropoda, Natal Museum) completed all the artwork.

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